REMARKS

No extension of time is believed to be needed in connection with the filing of this paper. However, if an extension is deemed to be needed, please consider this paper to be a request for such extension and deduct any required fee from deposit account 10-1205/BECK:001.

Claim rejections: - 35 USC § 103

Glagau et al with Runge et al:

Claims 1, 3-11, 19-26, 33-39, 4-44 (sic), 46 and 47 stand rejected as unpatentable over Glagau et al. (DE 10206995 machine translation) in view of Runge et al. (WO 99/57242- using US 7037708 as translation).

Glagau et al is cited to show teaching of a two part micronutrient product, such as a multi-component single tablet in which a first zone has a probiotic and the second zone has other materials. Glagau et al is silent as to water content and water activity.

Runge et al is cited to show teaching of a probiotic tablet formulation having a moisture content of from 2-3% by weight and a water activity of from 0.03 to 0.15.

The Examiner suggests that it would have been obvious to apply the formulation methods of Runge et al. in respect of water content and water activity to the two zone compositions of Glagau et al.

The introduction to the Applicant's specification (page 1, para 1) explains that the invention addresses problems associated with the formulation of probiotic micro-organisms with other nutritionally active materials such as vitamins, minerals, carbohydrates, proteins, co-enzymes, enzymes, plant extracts, trace elements and/or fats. As explained there, many probiotic organisms are quite stable when kept by themselves in dried form.

What is shown in Runge et al. is in accordance with this acknowledged state of the art. That is to say Runge et al discloses dried formulations in which micro-organisms are kept in the

absence of the recited nutritionally active materials and the formulations are asserted to be such that the micro-organisms remain active for a prolonged period.

If one looks at the spray dried powders produced in the Examples in Runge et al., one sees this situation. The organisms are mixed with non-deleterious ingredients in Examples S1-S6 and spray dried powders are made. These are compacted into compacted starter culture preparations in the Formulation Example at column 18, again without addition of nutritionally active materials. Since such materials are absent, it is unsurprising that the micro-organisms should remain viable on storage.

The skilled reader learns nothing however from this in connection with how to store probiotic micro-organisms in the presence of such nutritionally active materials. In particular, the skilled reader does not learn that the water content and water activity disclosed in Runge et al. is relevant to the problem of storage of probiotic micro-organisms in the presence of such nutritionally active materials.

Glagau et al. on the other hand does attempt a co-formulation of probiotic micro-organisms with nutritionally active materials such as vitamins and trace elements and seeks to deal with the task by a two part formulation in which the probiotic micro-organisms are in one set of granules and the remaining materials are in a second set of granules.

We note that the Examiner states that Glagau et al discloses in the abstract that the various ingredients are present in first and second zones. The term 'zone' may suggest in English that the zones are parts of a single unit like a tablet. We would not accept that this is what is disclosed in Glagau et al, if that is what is being suggested. The abstract refers to 'Productanteile' and to a first and a second 'Anteil'. The normal translation of Anteil is 'portion' rather than 'zone', and it is thus that it is translated in the machine translation (see for instance claim 1).

We have not observed in Glagau et al any disclosure of a single unit like a tablet containing both of the 'product portions'. There are several references to these portions being separate such that they are separately administered, for instance page 5 of the translation, second paragraph. In so far as tablets are referred to, the intention seems to be that each portion should be in a separate tablet. Thus, the last line on page 5 of the translation refers to tablets

and that their administration can lead to different release times in the stomach for the different ingredients. That would seem compatible only with the use of different tablets for the different ingredients.

The Example seems to prepare two separate granulates.

So in our submission, Glagau et al also teaches the skilled reader nothing regarding how to make a stable composition containing both the probiotic micro-organisms and the other nutritionally active ingredients. Indeed, its teaching is to avoid the difficulty by making in effect two separate products.

The Examiner specifically mentions page 1, paragraph 5 of the cited machine translation. This is somewhat obscurely worded. To assist the Examiner we enclose with this response an alternative machine translation which seems somewhat clearer. In the cited translation, the passage in question reads:

> 'The daily dosage of available products to the support of the immune system will multiple in form of a single tablet or capsule administered, in order to come the need of the consumer to against as simple an application, without possible negative interactions of the ingredients as possible sufficient calculation to inertial. A drawback of the available products consists of the fact that a combination of per bio tables cultures and the Prebiotikums inulin has a potent exhausting effect if necessary also from vitamin C with common oral administration.'

In the attached translation, it reads:

> 'The daily dose of available products to support the immune system is often administered as a single tablet or capsule in order to benefit the consumer need for maximum ease of use to meet and to avoid possible adverse interactions of the ingredients sufficiently taken into account. A disadvantage of the products available is that a combination of probiotic cultures and inulin Prebiotikums possibly with vitamin C when co-administered orally has a strong laxative effect.'

In either version it is apparent that this is not a teaching by Glagau et al as to how to make products according to their invention. It is part of the acknowledgement of prior art. Neither is it a disclosure that formulation as a single tablet is desirable. Rather it is part of an account of the problems of such formulations.

The next paragraph is particularly illuminating. In the translation now provided, it states:

> 'Another disadvantage is that many products of gastric acid to an extensive decomposition of the probiotic cultures, such as results of lactic acid bacteria. The amount of probiotic cultures, which ultimately reaches the intestine is negligible. In addition, the number of probiotic the intestine alive achieved cultures following the adverse ruling on the site of action for growth and living conditions is further reduced, so that a considerable loss of activity occurs within a short time.'

Thus, the single tablet formulations which were prior art for Glagau et al are criticized as resulting in loss of activity of the probiotic micro-organisms. That is not only the problem that Glagau et al seek to solve, but it is the same problem that is addressed by the present application.

Glagau et al however address the problem of lack of viability on storage of single tablet formulations by splitting the formulation into two separate units, one containing probiotic micro-organisms and the other containing the incompatible ingredients. Thus, Glagau et al prevent the other ingredients interfering with the micro-organisms by making a complete physical separation such that each can be administered separately.

This teaches away from the different solution proposed in the present application.

Since neither cited specification discloses any composition which is a tablet comprising a probiotic micro-organism and other nutritionally active ingredients, we submit that they are incapable of proper combination to render the claimed invention obvious.

However, we further submit that even if Glagau et al had actually taught a composition in the form of a tablet containing both of its 'product portions' together, the invention as claimed would still not have been obvious in view of the suggested combination of art.

Attempts have been made in the art to co-formulate probiotic micro-organisms with other nutritionally active ingredients, as acknowledged in the introduction. However, this led to a perceived need for extreme drying of the ingredients, beyond the level permitted by the Applicant's claims. A skilled reader familiar with that practice reading Glagau et al (on the

hypothesis that Glagau et al somehow does teach co-formulation - which is not accepted) would suppose that extreme drying would be needed in Glagau et al also. The skilled reader would not be persuaded by reading Runge et al that this would not be the case. Although Runge et al teaches less than extreme levels of drying, that is in the context of a spray dried powder or compacted starter culture in which nutritionally active ingredients are avoided. The skilled person would not learn from the teaching of Runge et al that extreme drying would not be a necessity in a two part tablet formulation containing both probiotic micro-organisms and other nutritionally active ingredients.

Should the skilled reader for some reason contemplate what would be the outcome of putting other nutritionally active ingredients into the formulations of Runge et al (keeping the suggested levels of water content and water activity), the skilled reader could not have a reasonable expectation of success in maintaining the ability of the probiotic micro-organisms to withstand long term storage based on these teachings. The reasonable expectation would have been that the relatively high water content of such a product would facilitate the action of the 'other nutritionally active ingredients' in adversely affecting the micro-organisms and nothing in either of the two references would suggest otherwise.

However, the point is moot in that Glagau et al does not actually teach a composition in the form of a tablet having two zones as alleged.

The rejected claims are not obvious over the cited combination of art.

Glagau et al with Runge et al and Belicova et al:

Claim 2 has been rejected as being unpatentable over Glagau et al in view of Runge et al and further in view of Belicova et al. However, Belicova et al is cited to teach the use of selenium and does nothing to rectify the deficiencies of the main references in combination pointed out above.

Furthermore, Belicova et al does not contain any teaching of how to prepare any kind of storage stable formulation of a probiotic micro-organism with selenium.

Glagau et al in view of Runge et al, further in view of Andoh et al and Bakuleh et al

Claims 32, 45 and 48 stand rejected on the basis of the combination of references listed above.

None of the secondary references cited serve to make up for the deficiencies of Glagau et al and Runge et al discussed above. Andoh et al teaches sustained release tablet formulations. It does not discuss the formulation of probiotic micro-organisms or the conditions which keep such micro-organisms viable. Andoh et al teaches tablets formed by compression of coated granules. There is no teaching as to the desirable water content or water activity of the granules or their coating. Nothing in Andoh et al suggests the suitability of the described tablet structure for formulating micro-organisms.

Bakuleh et al attempts to prepare storage stable formulations of probiotic micro-organisms and describes layered tablets which attempt to keep separate the micro-organisms and an anti-infective agent (i.e. an anti-biotic, e.g. Ampicillin). No data are presented to substantiate the alleged storage stability of the micro-organisms and no nutritionally active ingredients are present. There is no teaching relevant to water content or water activity.

The Examiner states that it would have been obvious to apply the formulation strategies of Andoh et al or Bakuleh et al to the probiotic tablets of Glagau et al. However, we respectfully point out that none of these teachings contain anything concerning water content or water activity. None of the cited art (including Runge et al) suggests that control of water activity enables a relatively high water content to be employed in a probiotic micro-organism formulation containing other nutritionally active ingredients (absent in Runge et al, Andoh et al and Bakuleh et al) with maintenance of organism viability.

Glagau et al in view of Runge et al and further in view of Cavaliere et al

Claim 50 stands rejected on the basis of the above references. Cavaliere et al does nothing to make good the deficiencies of the primary references discussed above. Further, whilst Cavaliere et al discloses tablets having two zones providing differential release rates, both contain micro-organisms and neither contains other nutritionally active ingredients kept separate from the micro-organisms.

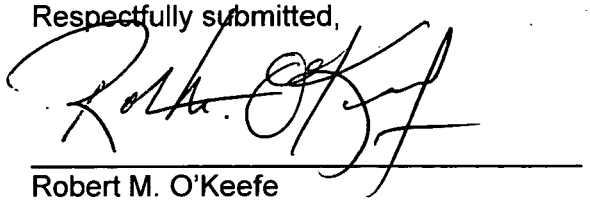
We submit that the subject of all of the claims of the application is patentable having regard to the cited art.

CONCLUSION

In view of the foregoing, it is submitted that the claims are in condition for allowance. Accordingly, favorable reconsideration and Notice of Allowance are courteously solicited. If the claims are allowed, applicant respectfully requests that any appropriate claims that are currently withdrawn be rejoined into the application.

Should any fees under 37 CRF 1.16-1.21 be required for any reason relating to the enclosed materials, the Commissioner is authorized to deduct such fees from Deposit Account No. 10-1205/BECK:001. The examiner is invited to contact the undersigned at the phone number indicated below with any questions or comments, or to otherwise facilitate expeditious and compact prosecution of the application.

Respectfully submitted,



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